



Dengue Fever Frequently Asked Questions (FAQ) MOSQUITOES

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Are all mosquitoes alike?

No. Mosquitoes have been around for millions of years. In that time, they've diversified into about 3,000 species worldwide. They have successfully adapted to climates from the arctic to the tropics. Some mosquitoes bite humans while others prefer other animals and some even just sip plant nectar; some transmit diseases, while others do not; some are active during the day, others at night; some prefer to breed in clean water, others in dirty ponds and swamps.

In Hawaii, the *Aedes aegypti* (Yellow Fever Mosquito) and *Aedes albopictus* (Asian Tiger Mosquito or Forest Day Mosquito) carry the dengue virus. Other Aedes members can transmit dengue, but are not found in Hawaii. These mosquitoes are most active in the early morning after daybreak and the late afternoon before sunset.

Do all mosquitoes bite?

No. Only the females bite. Female mosquitoes require the protein of a blood meal for development of their eggs – they do not feed on blood for their own nourishment. Since blood is only required to build eggs, the males do not take blood, but rather feed on plant nectar.

Females may feed one to three times to obtain a full blood meal. The speed of digestion of the blood-meal may take 2-3 days in tropical areas, and then the female is said to be full of eggs. After laying the eggs, the female mosquito is ready to take another blood-meal. So the female mosquito feeds several times during its lifetime.

Can dengue be passed from the female mosquito to her offspring?

A female *Aedes* mosquito can lay from 50 to 300 eggs in a lifetime. There is some evidence that an infected female mosquito can pass the dengue virus to her eggs, but transmission by an infected mosquito to a human and from an infected human to a mosquito remain the primary routes of concern. Eliminating mosquito breeding grounds and avoiding being bitten remain the most effective courses of action.

What are common mosquito breeding sites to watch for?

Heavy mosquito nuisance usually indicates a nearby breeding source. *Aedes* mosquitoes typically lay their eggs on accessible surfaces above the water line/level. Make a systematic and thorough inspection around your home. Common breeding sites are in water found in old tires, clogged roof gutters, cans, bottles, unused swimming pools, unused fish ponds, pineapple lilies (bromeliads), hollow bamboo stumps, hollow tree stumps, uncapped hollow tile walls, uncapped fence pipes, and overflow trays under house plants.

What is the life-cycle of an *Aedes* mosquito?

Mosquitoes develop through four stages; egg, larva (wiggler), pupa (tumbler) and adult. It takes about 48 hours to finish egg embryonic development. The eggs hatch rapidly when they are flooded. The eggs can also survive during long periods of extreme dryness, sometimes for more than a year. Wigglers take about 7 days or longer to develop into an adult mosquito depending on the temperature and food supply. Mosquito larvae feed on a variety of organic materials and numerous other plant and animal micro-organisms in the water.

The lifespan of an adult stage *Aedes* mosquito can be as short as a few days to as long as several weeks.

What steps should be taken to reduce mosquito nuisance at home?

- Remove or empty anything that catches or holds standing water, such as old tires, flowerpots, toys, buckets, and plastic tarps on your premises.
- For plants that hold water, flush with a hose or spray with soapy water once a week.
- Use mosquito-eating fish, such as guppies, in unused swimming pools, constructed fish ponds with no outlet to the environment, or other large containers that cannot be removed or emptied of standing water. To protect Hawaii's rare native species and aquatic habitats, do not release guppies or other alien species into the natural environment.
- Install or repair window screens and doors to keep out mosquitoes. Screens are your best protection against mosquito nuisance in your home.
- Clean your gutters. Remove leaves and debris so water will drain freely.

Aedes albopictus adults usually rest out of doors, in places such as in bushes, but they can be found indoors in houses and other dwellings. *Aedes aegypti* are most commonly found indoors, and only occasionally outdoors in garden vegetation. These mosquitoes travel less than 200 yards.

If I have contracted the dengue virus, how long am I infectious to mosquitoes?

A person infected with the dengue virus can transmit the infection to a mosquito starting around the time the first symptoms appear. The risk of transmission is highest when the virus is most

strongly present in an infected person, typically in the first few days after fever begins and lasting about a week. After several days, the presence of the virus drops considerably.

Individuals who have been infected with dengue virus should be especially cautious about coming into contact with mosquitoes and should avoid being bitten, in order to prevent their infection from being transmitted to mosquitoes who may go on to spread the virus to other people.

Can mosquitoes pass dengue to other mosquitoes, or pets and domestic animals?

Mosquitoes cannot pass dengue to other mosquitoes. The only animals known to be affected when bitten by a mosquito infected with dengue fever are monkeys. Other animals do not serve as reservoirs of dengue.

What steps can be taken for immediate temporary control?

- Eliminate adult mosquitoes with aerosol insecticide labeled for flying insects.
- Use insecticides specifically labeled for controlling mosquito larvae in breeding sites that cannot be emptied or removed. Consult a garden shop or a chemical company for available insecticides.
- Carefully follow the insecticide label's instructions for use

CAUTION: Certain pesticides and their solvents may cause respiratory irritation. Persons with respiratory diseases should consult their physicians before using any pesticide. It is a violation of federal law if pesticides are not applied exactly as the label directs. Insecticides can be harmful to people, pets, wildlife, and the environment when used improperly. For more information on proper pesticide use, go to <http://hdoa.hawaii.gov/pi/pest/faq-for-pesticides>.

How can I protect my children from mosquito bites?

Children (and adults) can wear clothing with long pants and long sleeves while outdoors. DEET or other repellents such as permethrin (not registered for use on skin) can also be applied to clothing, as mosquitoes may bite through thin fabric. Mosquito netting can be used over infant carriers. Also, try to reduce the number of mosquitoes in the area by getting rid of containers with standing water that provide breeding places for mosquitoes.

For information on rainwater catchment systems and “dry” injection wells, go to:

<http://health.hawaii.gov/docd/files/2015/12/dengue-catchment-fact-sheet.pdf>

For more information on dengue fever and the current Hawaii Island outbreak, go to:

<http://health.hawaii.gov/docd/dengue-outbreak-2015/>

<http://health.hawaii.gov/docd/files/2015/12/dengue-faq-mosquitoes.pdf>